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Small Nebulous Ring About Nova Persei, 1917, Nov. 15.  
Photographed with 60-inch reflector. Scale: 1 mm = 2".5

following night shows the same nova of magnitude 17.8; Nova No. 5 is invisible on this fine plate. Two negatives taken by Mr. Shapley on December 9 and December 19 show Nova No. 6 with magnitudes 17.5 and 18.4, respectively.

A photograph taken January 15, 1918, with poor seeing, shows Nova No. 6 near the limit of visibility, its magnitude certainly below 19. On this plate Nova No. 7 was discovered, magnitude 17.1; its position is approximately 11" north and 143" west of the nucleus of the nebula. A photograph taken on January 17 by Mr. Shapley confirms this discovery; on the latter date the magnitude was 17.3.

A photograph taken February 9, 1918, with poor seeing, fails to show Nova No. 7 with certainty. The result was unexpected, since no other nova found in the spiral nebulae has faded so rapidly. Nova No. 8 was discovered on this negative; its magnitude was 17.7 at discovery; its position is approximately 46" south and 115" west of the nucleus of the nebula. A photograph taken February 10th with fine seeing still failed to show Nova No. 7 with certainty; its magnitude was therefore probably below 19.5. Nova No. 8 remained at magnitude 17.7.

The exposure time for each of the negatives referred to above was about 70 minutes.

The numbers used in the foregoing discussion refer to the novae found in the *Andromeda* nebula in the order of discovery. No. 1 is that discovered in August, 1885; Nos. 2 and 3 are those found last August on Mount Wilson photographs taken in September, 1909; No. 4 is that discovered by Shapley on September 11, 1917, and No. 5 was found October 16, 1917.

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#### THE SMALL NEBULOUS RING ABOUT NOVA PERSEI

A photograph of Nova *Persei* taken with the 60-inch reflector on November 15, 1917, shows very strongly the small nebulous ring about the star, which was discovered October 16th, and announced in the December number of these PUBLICATIONS. The ring is so small and faint that a fine-grained plate (Seed 23) was used, and an exposure of 5½ hours was given; atmospheric conditions were very fine.

The photograph confirms the earlier one, showing a continuous ring about 17" in diameter, nearly round, with the nova at its

center. Much fine detail is shown both in the ring and in the relatively bright, nearly straight ray of nebulosity to the southwest, which was discovered by Barnard and confirmed photographically by Pease.

Still another photograph of this object was taken on December 13th, on a Seed 23 plate and with very fine seeing; the exposure time was  $4\frac{1}{2}$  hours. A careful comparison of the negative fails to show with certainty any change in either the form or size of the ring.

The accompanying illustration is enlarged 11 diameters from the original negative; the scale, therefore, is about  $2''.5$  to the millimeter.

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#### NOTE ON THE DISTRIBUTION OF STARS IN THE GLOBULAR CLUSTER MESSIER 5

In the earlier study of galactic planes in globular clusters no plates of long exposure were available for the bright northern system Messier 5 (N. G. C. 5904), but Mr. Pease has now secured and kindly placed at our disposal a photograph having an exposure of  $2^h 40^m$  at the principal focus of the 60-inch reflector. More than 15,000 stars appear on the plate within a radius of  $15'$  from the nucleus.

In order to study the distribution with respect to direction from the center, a system of sectors and concentric rings, photographed on glass, was superposed over the negative of the cluster; the stars were twice counted for all of the small divisions, except those in the central burned-out area, which extends over 12.6 square minutes of arc. The total number of stars in each  $30^\circ$  sector, lying in the annulus bounded by the circles of  $3'$  and  $15'$  radius, are given, with position angle as argument, in the following tabulation:

Position Angle	$15^\circ$	$45^\circ$	$75^\circ$	$105^\circ$	$135^\circ$	$165^\circ$
Number of Stars	924	1016	972	861	693	783
Position Angle	$195^\circ$	$225^\circ$	$255^\circ$	$285^\circ$	$315^\circ$	$345^\circ$
Number of Stars	870	978	1037	955	907	952

Combining opposite sectors to eliminate possible error of centering we get the following means, which show conspicuously an elongation with major axis in position angle  $55^\circ$ :

Position Angle	$15^\circ$	$45^\circ$	$75^\circ$	$105^\circ$	$135^\circ$	$165^\circ$
Number of Stars	897	997	1004	908	800	868